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Scaife

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(54) **SECURITY BYPASS ENVIRONMENT FOR CIRCUMVENTING A SECURITY APPLICATION IN A COMPUTING ENVIRONMENT**

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G06F 21/51 (2013.01)
H04L 29/06 (2006.01)

(52) **U.S. Cl.**

CPC ***G06F 21/51*** (2013.01); *H04L 63/20* (2013.01); *G06F 2221/2113* (2013.01); *H04L 63/105* (2013.01)
USPC **726/5**; 726/11

(58) **Field of Classification Search**

CPC H04L 63/02; H04L 63/0263; G06F 21/62; G06F 21/6218
USPC 726/5, 11, 22
See application file for complete search history.

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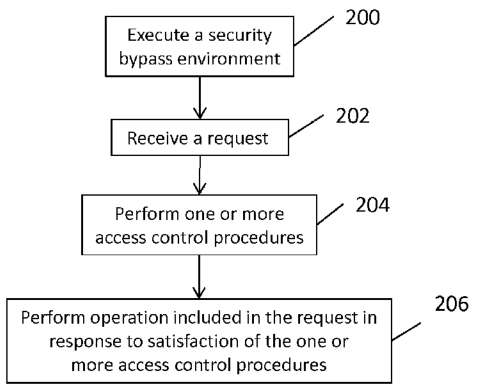
(57) **ABSTRACT**

Exemplary embodiments of the present disclosure are directed to performing an operation in a computing environment that is prohibited by a security application governing the computing environment. Exemplary embodiments can generate a security bypass environment in a computing environment governed by the security application to provide a bypass to the security application. In exemplary embodiments, a request to perform the operation can be received via the security bypass environment and the operation can be performed through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment so that the performance of the operation bypasses the security application.

20 Claims, 6 Drawing Sheets


Execute a security bypass environment
200
Receive a request
202
Perform one or more access control procedures
204
Perform operation included in the request in response to satisfaction of the one or more access control procedures
206

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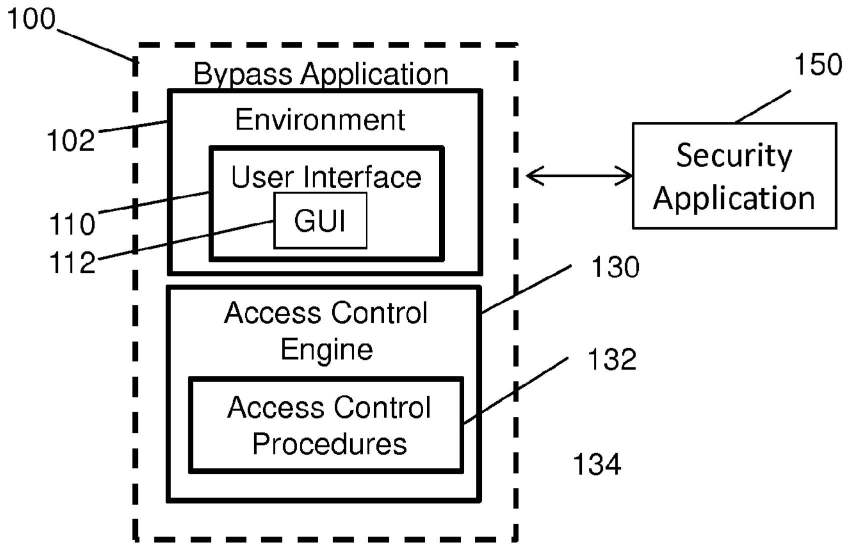

Figure 1

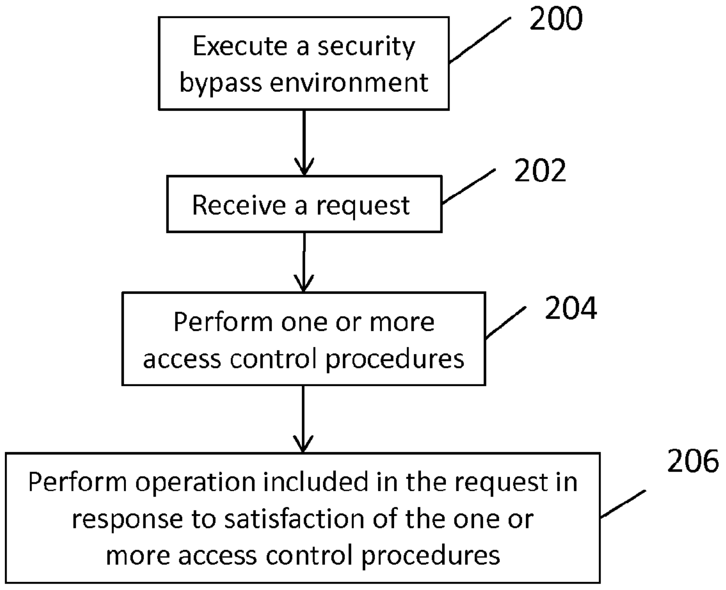
Execute a security bypass environment
200
Receive a request
202
Perform one or more access control procedures
204
Perform operation included in the request in response to satisfaction of the one or more access control procedures
206

Figure 2

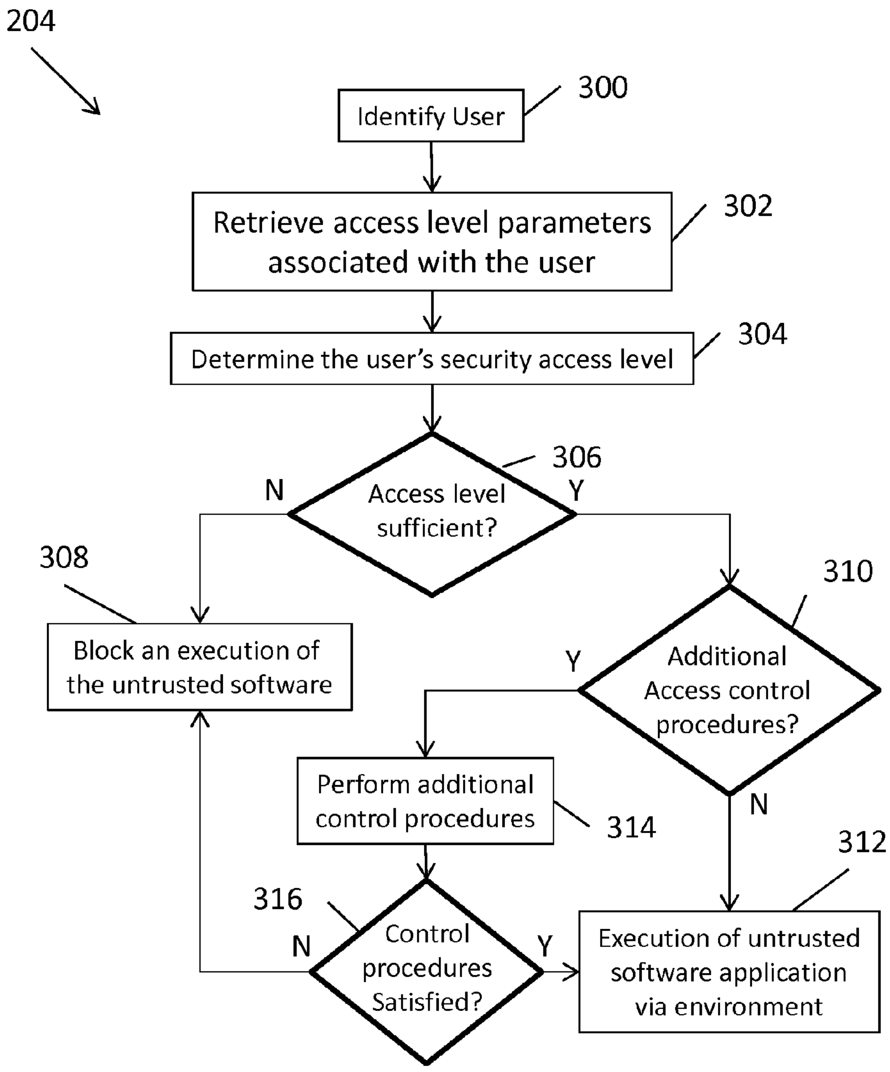
204
Identify User
300
Retrieve access level parameters associated with the user
302
Determine the user's security access level
304
Access level sufficient?
306
N
Y
308
Block an execution of the untrusted software
310
Additional Access control procedures?
Y
N
Perform additional control procedures
314
312
316
Control procedures Satisfied?
N
Y
Execution of untrusted software application via environment

Figure 3

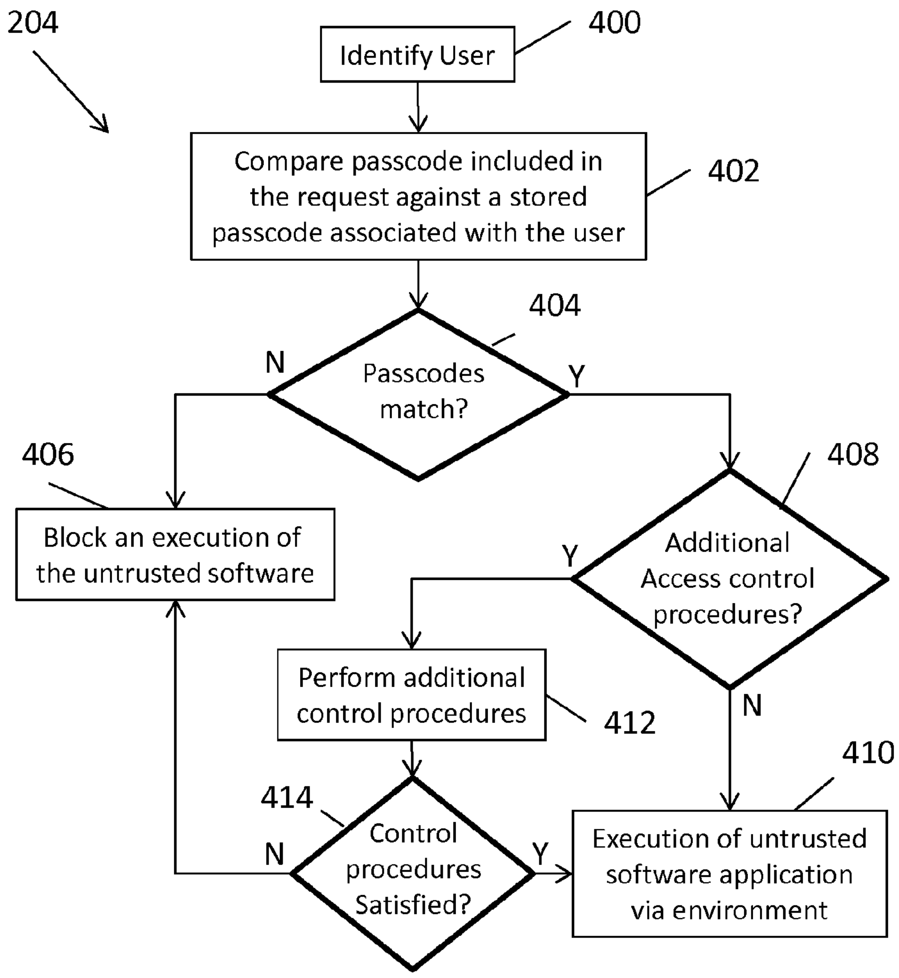
204
Identify User
400
Compare passcode included in the request against a stored passcode associated with the user
402
404
Passcodes match?
N
Y
406
Block an execution of the untrusted software
408
Additional Access control procedures?
Y
N
Perform additional control procedures
412
410
414
Control procedures Satisfied?
N
Y
Execution of untrusted software application via environment

Figure 4

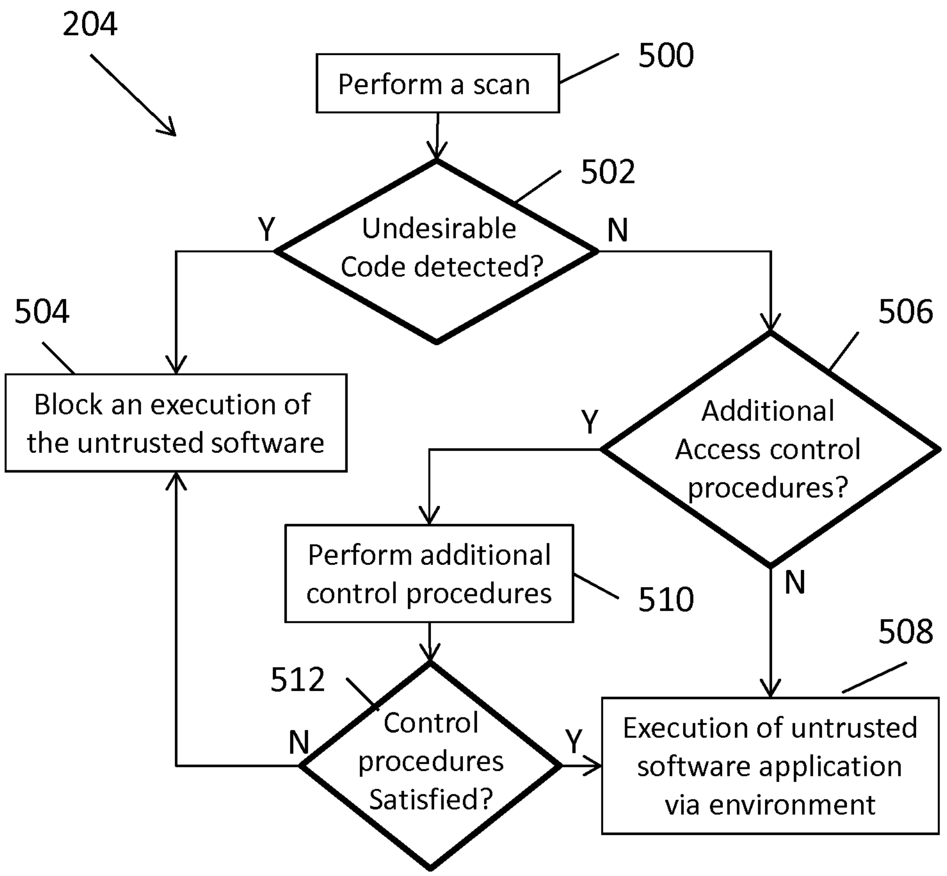
204
Perform a scan
500
Undesirable Code detected?
502
Y
N
504
Block an execution of the untrusted software
506
Additional Access control procedures?
Y
N
Perform additional control procedures
510
508
512
Control procedures Satisfied?
N
Y
Execution of untrusted software application via environment

Figure 5

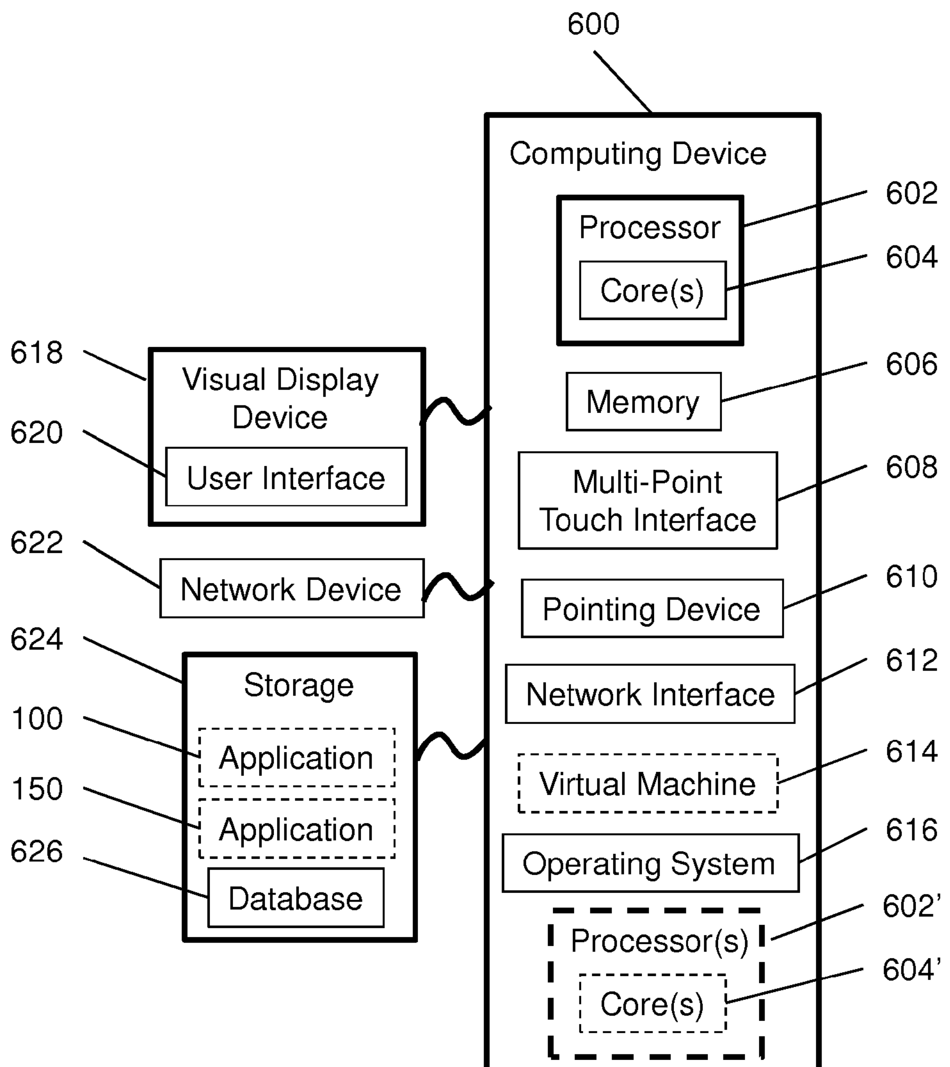
600
Computing Device
602
Processor
604
Core(s)
606
Memory
608
Multi-Point Touch Interface
610
Pointing Device
612
Network Interface
614
Virtual Machine
616
Operating System
602'
Processor(s)
604'
Core(s)
618
Visual Display Device
620
User Interface
622
Network Device
624
Storage
100
Application
150
Application
626
Database

Figure 6

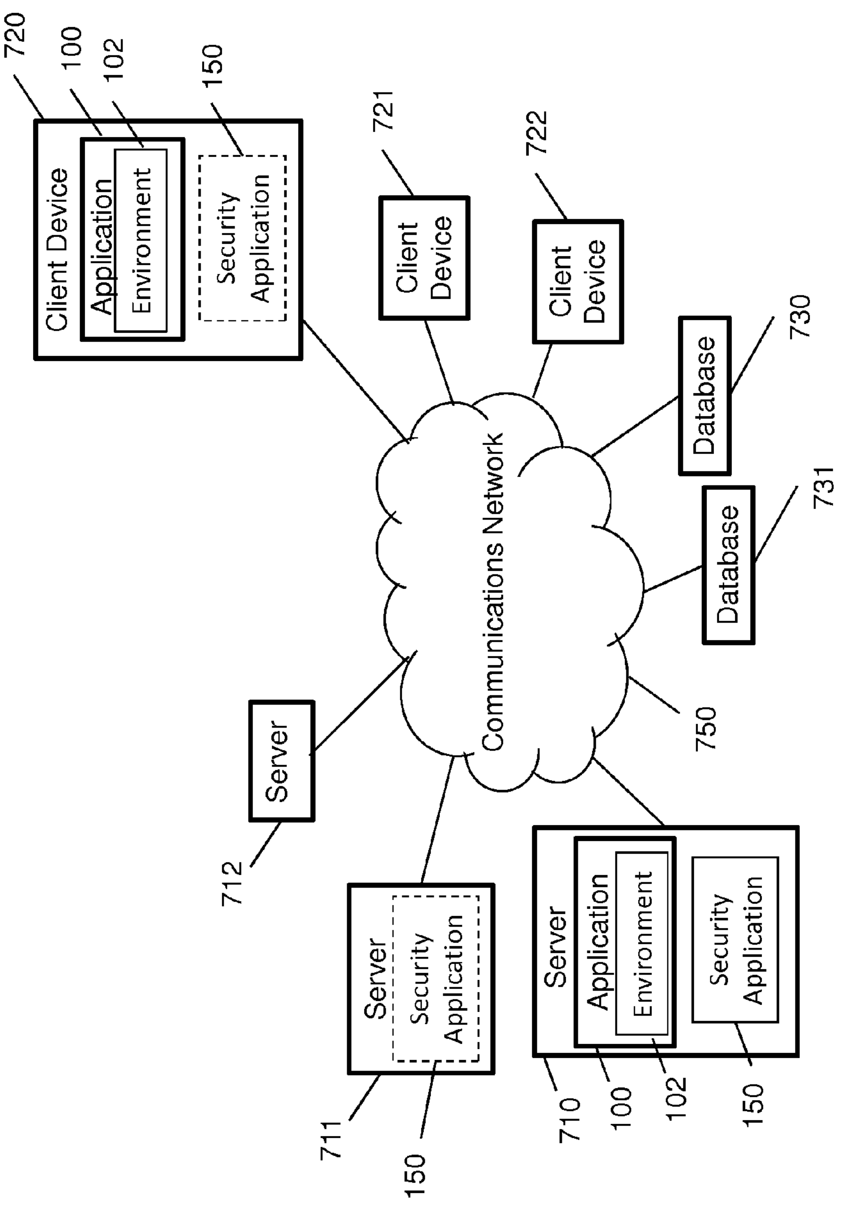
720
100
102
150
Client Device
Application
Environment
Security Application
721
Client Device
722
Client Device
Database
730
Database
731
Communications Network
750
Server
712
Server
Security Application
711
150
Server
Application
Environment
Security Application
710
100
102
150

Figure 7

SECURITY BYPASS ENVIRONMENT FOR CIRCUMVENTING A SECURITY APPLICATION IN A COMPUTING ENVIRONMENT

BACKGROUND

Enterprises often implement security programs to restrict or limit the permissions and/or access rights of the users of the enterprises' computers and/or networks. For example, conventional security programs can be programmed to prevent a user of the network from installing and/or executing unauthorized software applications unless the user is an administrator of the network having certain permissions granted by the security program.

Some conventional security programs implement "whitelisting" and/or "blacklisting" schemes to determine which software applications can be installed and/or executed by the users governed by the security program. Whitelisting-based security technologies work opposite traditional blacklisting-based technologies like anti-virus. Particularly, blacklisting schemes generate a "blacklist" of software application that cannot be installed and/or executed by a computer that is governed by the blacklisting scheme. In contrast to blacklisting schemes, whitelisting schemes prevent all new software applications from executing on a system unless it has first been added to a whitelist and/or identified as a "trusted" program. Software applications or changes, modifications, or updates thereto that are prohibited by the security program can be referred to as being "out-of-band."

Conventional computer and/or network security solutions often do not have the flexibility to allow users to install, update, modify, and/or execute out-of-band software on their systems, e.g., for troubleshooting or single-system installs. For example, conventional security solutions attempt to support out-of-band software by either fully allowing a user to perform whatever actions they wish or disabling the product altogether. These conventional approaches to out-of-band software can result in an enterprise being vulnerable to unauthorized access and attacks that can compromise their network and/or data.

SUMMARY

Exemplary embodiments of the present disclosure are directed to a security bypass environment configured and/or programmed to provide a gateway in a computing environment governed by a security application through which unauthorized operations can be implemented that would otherwise be prohibited by the security application. The security bypass environment can be subject to the security application and the security application can be configured to allow the security bypass environment to be generated. In some embodiments, the security bypass environment can be programmed to exploit whitelisting schemes of a security application by performing the unauthorized operations through the security bypass environment such that the unauthorized operations receive (e.g. inherit) the security rights of the security bypass environment and circumvent the security application. Exemplary embodiments of the present disclosure advantageously allow, for example, untrusted programs to run by passing the user and the executable through one or more (configurable) gates implementing one or more access control procedures including, but not limited to, user authorization, offloaded virus scanning, and one-time password authentication.

In an exemplary embodiment, a method of performing an operation in a computing environment governed by a security

application is disclosed. The method includes generating a security bypass environment in the computing environment governed by the security application. The security bypass environment is programmed to provide a bypass to the security application. The method also includes receiving a request to perform an operation via the security bypass environment, performance of the operation being prohibited by the security application and performing the operation through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing by the security application.

In another exemplary embodiment, a system for performing an operation in a computing environment is disclosed. The computing environment includes a plurality of computing devices configured to be communicatively coupled via a communications network, wherein the computing devices are governed by a security application. A processing device associated with one of the computing devices is programmed to generate a security bypass environment in the computing environment. The processing device is programmed to configure the security bypass environment to provide a bypass to the security application. The processing device is also programmed to receive a request to perform an operation via the security bypass environment, performance of the operation being prohibited by the security application and perform the operation through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing by the security application.

In yet another embodiment, a non-transitory computer-readable storage device configured to store instructions executable by a processing device is disclosed. Execution of the instructions causes the processing device to implement a method of performing an operation in a computing environment, wherein the method includes generating a security bypass environment in the computing environment governed by the security application. The security bypass environment is programmed to provide a bypass to the security application. The method implemented in response to execution of the instruction further includes receiving a request to perform an operation via the security bypass environment, performance of the operation being prohibited by the security application and performing the operation through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing by the security application.

Other objects and features will become apparent from the following detailed description considered in conjunction with the accompanying drawings. It is to be understood, however, that the drawings are designed as an illustration only and not as a definition of the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of an exemplary bypass application programmed to create an environment for circumventing a security application.

FIG. **2** is a flowchart of an exemplary security bypass procedure implemented by an execution of embodiments of the application of FIG. **1**.

FIG. **3** is a flowchart of an exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment.

FIG. **4** is a flowchart of another exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment.

FIG. **5** is a flowchart of another exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment.

FIG. **6** is a block diagram of an exemplary computing device for executing embodiments of the bypass application to implement a security bypass environment.

FIG. **7** is an exemplary client-server environment for executing embodiments of the bypass application to implement a security bypass environment.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

Exemplary embodiments of the present disclosure are directed to performing an operation in a computing environment that is prohibited by a security application governing the computing environment. Exemplary embodiments can generate a security bypass environment in a computing environment governed by the security application to provide a bypass to the security application. In exemplary embodiments, a request to perform the operation can be received via the security bypass environment and the operation can be performed through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment so that the performance of the operation bypasses the security application.

As used herein, the term "security" refers to computing security including, but not limited to protection from execution of unauthorized, undesirable, and/or malicious software applications in a computing environment, virus protection, malware protection, cyber security, and/or any other suitable aspects of computing security.

As used herein, the term "gate" refers to a condition and/or event to be satisfied before an action can be performed and the term "gating" refers to preventing a performance of an action.

FIG. **1** is a block diagram of an exemplary security bypass application **100** (hereinafter "application **100**") configured and/or programmed to generate a security bypass environment **102** (hereinafter "environment **102**") in a computing environment. In exemplary embodiments, the application **100** can be implemented using one or more computing devices. An exemplary computing device suitable for implementing embodiments of the application **100** is shown, for example, in FIG. **6**.

Execution of the application **100** can be subject to permission from a security application **150** governing the computing environment. For example, an enterprise security application, such as security applications developed by McAfee, Norton, Computer Associates (CA), and/or TrendMicro can be implemented by an enterprise to monitor and/or manage activities of computing devices in the enterprise's computer network. The security application can perform virus/malware scans (in real-time and/or periodically); prohibit installation, modification, updating, and/or execution of unauthorized software by computing devices in the enterprise's network; and/or identify and permit trusted software to be installed, modified, updated, and/or executed on or by a computing device in the enterprise's network. In some embodiments, software applications that cannot be identified as trusted are prohibited such that the software applications are considered an unauthorized software application (e.g., out-of-band) and installation and/or execution of the unauthorized software application is prohibited by the security application. As one example, trusted software applications can be can be identified by inclusion of the trusted software applications in a whitelist maintained by the security application. As another example, trusted software applications can be identified by digital certificates provided by the trusted software application.

The environment **102** created by an execution of the application **100** can be programmed to perform one or more security bypass procedures to facilitate performance of an operation otherwise prohibited by the security application. The environment **102** can include a user interface **110** and an access control engine **130**. The security bypass environment **102** operates as a gateway to programmatically facilitate authorized circumvention of the security application to permit performance of one or more operations that would conventionally be blocked by the security application. For example, operations performed via the security bypass environment **102** can include installation, updating, and/or execution of software applications that have not been allowed by the security application.

In exemplary embodiments, the environment **102** can be programmed and/or include executable code that exploits relationship schemes of the security application to augment and/or bypass the existing security protocol. For example, in relationship scheme, the trusted application can be identified by the security system as an application that can be executed in the computing environment (e.g., via a whitelist) such that any application called and/or implemented by the trusted application **100** during its operation receives security rights and permissions of the trusted application **100** such that security application **150** allows the application to be executed. Using this approach, applications called and/or implemented through the environment **102** can be run upon satisfying one or more of the access controls **130** by receiving some or all of the permissions and/or rights of the trusted application **100**. In some embodiments, the relationship scheme can use inherency such that an instance of the application to be executed inherits the security rights and permissions of the application **100**.

In exemplary embodiments, the user interface **110** can be programmed and/or include executable code to provide a graphical user interface (GUI) **112** through which a user can interact with the environment **102**. As an example, in some embodiments, the user interface **110** can be a command prompt displayed to a user. The GUI **112** displayed to the user can be programmed and/or configured to receive information from the user and/or can output information to the user. For example, the user interface **110** can be programmed and/or include executable code to receive one or more requests or commands from a human user, such as one or more commands for performing one or more operations, such as executing one or more untrusted software applications and/or processes. The request can include a passcode and/or a user identifier that can be used by the application **100** to determine whether the requested operation can be performed via the environment **102**. In exemplary embodiments, the user interface **110** can programmed and/or include executable code to interface with the access control engine **130**.

The access control engine **130** can programmed and/or configured to implement access control procedures **132** to programmatically facilitate one or more access control procedures **132** to be satisfied before the untrusted software application can be installed and/or executed by a computing device by circumventing the security application implemented in the enterprise network. The access control procedures **132** executed by the access control engine **130** can include an identification procedure for determining an identity of a user, a verification procedure, a virus detection procedure for offloaded virus scanning, one-time password authentication, and/or any other access control procedures suitable for gating performance of the one or more operations included in a received request. In some embodiments, the requested operation can be run a single time by passing the identity of the user and the executable through the (configurable) access control procedures (gates) so that each time the user performs the requested operation, the user must use the security bypass environment and must satisfy the access control procedures.

FIG. **2** is a flowchart of an exemplary security bypass procedure that can be programmatically implemented by an exemplary embodiment of the present disclosure to circumvent a security application governing a computing environment. To begin, the security bypass environment can be programmatically executed subject to the security application (step **200**). In an exemplary embodiment, the security application can be coded to include a whitelist identifying applications that are allowed to run in the computing environment and a security bypass application from which the security bypass environment is programmatically executed can be included in the whitelist. The security bypass application can reside at the user's client device and/or can reside on a server remote to the client device.

Once the security bypass environment has been generated, a request can be received in the security bypass environment via a user interface (step **202**). The request can be a request to perform one or more operations, such as, for example, a request for execution of an untrusted/unauthorized software application (e.g., a software application prohibited by the security application). In an exemplary embodiment, the untrusted application can be prohibited because the untrusted application is not identified in the whitelist maintained by the security application. In exemplary embodiments, the request can include one or more passcodes that can be verified by an access control procedure before the one or more operations can be performed. The passcodes can be programmatically generated and/or distributed to users for use with the security bypass environment. In exemplary embodiments, the passcode can be configured and/or programmed to expire in response to one or more events including, for example, a time period, a number of times the passcodes have been used, and/or in response to any other suitable event(s).

One or more access control procedures are programmatically performed in the security bypass environment in response to the request (step **204**). The one or more operations, e.g., execution of the untrusted software application, are performed upon satisfaction of the one or more access control procedures (step **206**). For example, the untrusted software application can be executed in response to satisfaction of the one or more access control procedures. In an exemplary embodiment, the untrusted software application can be executed through or in the security bypass environment and the untrusted software application can receive (e.g., inherit) the security rights and permissions of the security bypass application so that the security application allows the untrusted software application to be executed without requiring the untrusted software application to be included in the whitelist.

FIG. **3** is a flowchart of an exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment. To begin, an identity of the user submitting the request can be determined (step **300**). In exemplary embodiments, the identity of the user can be determined based on a user identifier, e.g., a user name associated with the user, an Internet Protocol (IP) and/or Media Access Control (MAC) address that can be included in the request for embodiments implemented in a server-client environment, an/or any other identifiers that are suitable for identifying a user.

Once the user has been identified, the security bypass environment can be programmed to retrieve access level parameters associated with the user, e.g., user, administrator, guest, etc. (step **302**), and can determine if the access level of the user satisfies a threshold access level specified in the security bypass environment (step **304**). If the access level is insufficient (step **306**), the requested operation is blocked by the security bypass environment (e.g., execution of the untrusted software application prohibited) (step **308**). If the access level is sufficient (step **306**), the security bypass environment determines whether there are additional access control procedures. The access level of the user can be compared to the retrieved access level parameters to determine if the access level is sufficient. If there are no further access control procedures (step **310**), the requested operation is performed (e.g., untrusted software is executed) (step **312**). If there are additional access control procedures to be performed (step **310**), the additional access control procedures are performed (step **314**). If one or more of the additional control procedures are not satisfied (step **316**), performance of the operation is blocked by the security bypass environment (step **308**). If the one or more additional access control procedures are satisfied (step **316**), the requested operation is performed (step **312**).

FIG. **4** is a flowchart of another exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment. To begin, an identity of the user submitting the request can be determined (step **400**). In exemplary embodiments, the identity of the user can be determined based on a user identifier, e.g., a user name associated with the user, an Internet Protocol (IP) and/or Media Access Control (MAC) address that can be included in the request for embodiments implemented in a server-client environment, an/or any other identifiers that are suitable for identifying a user.

Once the user has been identified, the security bypass environment can be programmed to compare the passcode included in the request with a passcode associated with the identified user (step **402**). In some embodiments, the passcode can be associated with a group of users having a specified access level such that users of different access levels have different passcodes and the user's access level it identified to determine which passcode to retrieve for comparison with the passcode included in the request. In some embodiments, the passcode can be user independent such that the passcode is not related to the user. As an example, the passcode can be distributed to multiple users such that each user uses the same passcode or a set of passcodes can be generated such that different passcodes can be distributed to different users, but the security bypass environment can be programmed to accept any passcode from the set of passcodes from any user.

If the passcode included in the request and the retrieved passcode do not match (step **404**), the requested operation is blocked by the security bypass environment (e.g., execution of the untrusted software application prohibited) (step **406**). If the passcode included in the request and the retrieved passcode match (step **404**), the security bypass environment determines whether there are additional access control procedures. If there are no further access control procedures (step **408**), the requested operation is performed (e.g., untrusted software is executed) (step **412**). If there are additional access control procedures to be performed (step **408**), the additional access control procedures are performed (step **412**). If one or more of the additional control procedures are not satisfied (step **414**), performance of the operation is blocked by the security bypass environment (step **406**). If the one or more additional access control procedures are satisfied (step **414**), the requested operation is performed (step **410**).

FIG. **5** is a flowchart of another exemplary access control procedure that can be programmatically implemented in response to a request received in the security bypass environment. For embodiments in which the request includes a request to install and/or execute an untrusted software application, the security bypass environment can be programmed and/or configured to initiate and/or perform a virus scan with respect to the untrusted software application (step **500**). For example, the security bypass environment can be programmed and/or configured to interface with the security application to instruct the security application to scan computer files associated with the untrusted security application for viruses, malware, Trojan horses, and/or any other undesirable code.

If undesirable code is detected (step **502**), the requested operation is blocked by the security bypass environment (e.g., execution of the untrusted software application prohibited) (step **504**). If undesirable code is not detected (step **502**), the security bypass environment determines whether there are additional access control procedures. If there are no further access control procedures (step **506**), the requested operation is performed (e.g., untrusted software is executed) (step **508**). If there are additional access control procedures to be performed (step **506**), the additional access control procedures are performed (step **510**). If one or more of the additional control procedures are not satisfied (step **512**), performance of the operation is blocked by the security bypass environment (step **504**). If the one or more additional access control procedures are satisfied (step **512**), the requested operation is performed (step **508**).

FIG. **6** is a block diagram of an exemplary computing device **600** that may be used to implement exemplary embodiments of the application **100**. The computing device **600** includes one or more non-transitory computer-readable media for storing one or more computer-executable instructions or software for implementing exemplary embodiments. The non-transitory computer-readable media may include, but are not limited to, one or more types of hardware memory, non-transitory tangible media (for example, one or more magnetic storage disks, one or more optical disks, one or more flash drives), and the like. For example, memory **606** included in the computing device **600** may store computer-readable and computer-executable instructions or software for implementing exemplary embodiments of the application **100**. The computing device **600** also includes configurable and/or programmable processor **602** and associated core **604**, and optionally, one or more additional configurable and/or programmable processor(s) **602'** and associated core(s) **604'** (for example, in the case of computer systems having multiple processors/cores), for executing computer-readable and computer-executable instructions or software stored in the memory **606** and other programs for controlling system hardware. Processor **602** and processor(s) **602'** may each be a single core processor or multiple core (**604** and **604'**) processor.

Virtualization may be employed in the computing device **600** so that infrastructure and resources in the computing device may be shared dynamically. A virtual machine **614** may be provided to handle a process running on multiple processors so that the process appears to be using only one computing resource rather than multiple computing resources. Multiple virtual machines may also be used with one processor.

Memory **606** may include a computer system memory or random access memory, such as DRAM, SRAM, EDO RAM, and the like. Memory **606** may include other types of memory as well, or combinations thereof.

A user may interact with the computing device **600** through a visual display device **618**, such as a computer monitor, which may display one or more user interfaces **620** that may be provided in accordance with exemplary embodiments. The computing device **600** may include other I/O devices for receiving input from a user, for example, a keyboard or any suitable multi-point touch interface **608**, a pointing device **610** (e.g., a mouse). The keyboard **608** and the pointing device **610** may be coupled to the visual display device **618**. The computing device **600** may include other suitable conventional I/O peripherals.

The computing device **600** may also include one or more storage devices **624**, such as a hard-drive, CD-ROM, or other computer readable media, for storing data and computer-readable instructions and/or software that implement exemplary embodiments of the application **100** described herein. Exemplary storage device **624** may also store instructions and/or software that implements the security application **150** and may also store one or more databases for storing any suitable information required to implement exemplary embodiments. For example, exemplary storage device **624** can store one or more databases **626** for storing information, such as information corresponding to one or more commands, operations, passcodes, user identifiers, and/or any other information to be used by embodiments of the application **100**. The databases may be updated by manually or automatically at any suitable time to add, delete, and/or update one or more items in the databases.

The computing device **600** can include a network interface **612** configured and/or programmed to interface via one or more network devices **622** with one or more networks, for example, Local Area Network (LAN), Wide Area Network (WAN) or the Internet through a variety of connections including, but not limited to, standard telephone lines, LAN or WAN links (for example, 802.11, T1, T3, 56 kb, X.25), broadband connections (for example, ISDN, Frame Relay, ATM), wireless connections, controller area network (CAN), or some combination of any or all of the above. The network interface **612** may include a built-in network adapter, network interface card, PCMCIA network card, card bus network adapter, wireless network adapter, USB network adapter, modem or any other device suitable for interfacing the computing device **600** to any type of network capable of communication and performing the operations described herein. Moreover, the computing device **600** may be any computer system, such as a workstation, desktop computer, server, laptop, handheld computer, tablet computer (e.g., the iPad™ tablet computer), mobile computing or communication device (e.g., the iPhone™ communication device), or other form of computing or telecommunications device that is capable of communication and that has sufficient processor power and memory capacity to perform the operations described herein.

The computing device **600** may run any operating system **616**, such as any of the versions of the Microsoft® Windows® operating systems, the different releases of the Unix and Linux operating systems, any version of the MacOS® for Macintosh computers, any embedded operating system, any real-time operating system, any open source operating system, any proprietary operating system, or any other operating system capable of running on the computing device and performing the operations described herein. In exemplary embodiments, the operating system **616** may be run in native mode or emulated mode. In an exemplary embodiment, the operating system **616** may be run on one or more cloud machine instances.

FIG. **7** is a block diagram of an exemplary client-server environment **700** configured and/or programmed to implement one or more embodiments of the environment **102** generated by the application **100**. The environment **700** includes servers **710**-**712** operatively coupled to clients **720**-**722**, via a communication network **750**, which can be any network over which information can be transmitted between devices communicatively coupled to the network. For example, the communication network **750** can be the Internet, Intranet, virtual private network (VPN), wide area network (WAN), local area network (LAN), and the like. The environment **700** can include repositories or database devices **730**, **731**, which can be operatively coupled to the servers **710**-**712**, as well as to clients **720**-**722**, via the communications network **750**. The servers **710**-**712**, clients **720**-**722**, and database devices **730**, **731** can be implemented as computing devices. Those skilled in the art will recognize that the database devices **730**, **731** can be incorporated into one or more of the servers **710**-**712** and/or clients **720**-**722** such that one or more of the servers can include databases.

In some embodiments, the application **100** can be implemented by a single device, e.g., the server **710** or client **720**, and can be accessed by other devices on the network **750**, e.g., the servers **711**-**712** and/or clients **721**-**722**. In some embodiments, the application **100** can be distributed among different devices (e.g., servers, clients, databases) in the communication network **750** such that one or more components of the application **100**, or portions thereof, can be implemented by different devices in the communication network **750**.

In an exemplary operation, the devices on the communications network (e.g., servers **710**-**712**, clients **720**-**722**, databases **730**-**731**) can be governed by an enterprise security application **150**, which can be implemented by servers **710**, **711**, and/or client **720**. In the present embodiment, the application **100** can reside on the server **710** and can be remotely executed by clients **720**-**722** via the communications network **750**. Upon execution of the application **100** by, for example, the client **720**, the application **100** can implement the user interface **110** to render the GUI **112** on a display device of the client **720** and can generate the environment **102**. A user interacting with the client **720** can submit a request including one or more operations to be performed and a passcode, as described herein, through the GUI **112**, which can be processed in the environment **102** generated by the application **100**. Upon processing the request, the application **100** can instruct the server **710** to perform one or more access controls. For example, the application **100** can instruct the server to construct a query to retrieve a stored passcode associated with the user of the client **720** from the database **730** and compare the passcode included in the request with the stored passcode. Additional access controls can be performed as described herein. Upon satisfaction of the access controls, the one or more operations included in the request can be performed by the server **710** and/or the client **720**. For example, the user can install and/or execute one or more untrusted software applications through the environment **102** using a processing device associated with the server **710** and/or the client **720**.

In describing exemplary embodiments, specific terminology is used for the sake of clarity. For purposes of description, each specific term is intended to at least include all technical and functional equivalents that operate in a similar manner to accomplish a similar purpose. Additionally, in some instances where a particular exemplary embodiment includes a plurality of system elements, device components or method steps,

those elements, components or steps may be replaced with a single element, component or step. Likewise, a single element, component or step may be replaced with a plurality of elements, components or steps that serve the same purpose. Moreover, while exemplary embodiments have been shown and described with references to particular embodiments thereof, those of ordinary skill in the art will understand that various substitutions and alterations in form and detail may be made therein without departing from the scope of the invention. Further still, other embodiments, functions and advantages are also within the scope of the invention.

Exemplary flowcharts are provided herein for illustrative purposes and are non-limiting examples of methods. One of ordinary skill in the art will recognize that exemplary methods may include more or fewer steps than those illustrated in the exemplary flowcharts, and that the steps in the exemplary flowcharts may be performed in a different order than the order shown in the illustrative flowcharts.

The invention claimed is:

1. A method of performing an operation in a computing environment governed by a security application, the method comprising:

executing a security bypass environment in the computing environment governed by the security application, the security bypass environment being programmed to provide a bypass to the security application;

receiving a request including a passcode which is dynamically specified and expires in response to an event to perform an operation in the computing environment via the security bypass environment, performance of the operation in the computing environment prohibited by the security application; and

performing the operation in the computing environment via the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing the security application,

wherein satisfaction of the access control criteria includes acceptance of the passcode.

2. The method of claim **1**, wherein executing a security bypass environment comprises executing a trusted software application subject to permission from a security application, the trusted software application providing the security bypass environment for bypassing the security application.

3. The method of claim **2**, wherein receiving the request to perform an operation comprises receiving a request to execute an untrusted software application via the security bypass environment provided by the trusted software application, execution of the untrusted software application being prohibited by the security application.

4. The method of claim **3**, wherein performing the operation comprises executing the untrusted software application via the security bypass environment in response to satisfaction of the access control criteria.

5. The method of claim **4**, wherein the trusted software is included in a whitelist associated with the security application.

6. The method of claim **1**, wherein the event is at least one of a specified time period or a quantity of times that the passcode has been used.

7. The method of claim **1**, wherein satisfaction of the access control criteria comprises execution of one or more access control procedures implemented prior to performing the operation.

8. The method of claim **7**, wherein the one or more access control procedures comprises executing scanning code associated with the operation for viruses in response to the request.

9. The method of claim **7**, wherein the one or more access control procedures comprises:

determining an identity of the user; and

comparing a passcode included in the request with a stored passcode corresponding to the identified user.

10. The method of claim **1**, wherein performance of the operation through the security bypass environment is required each time the operation is performed.

11. The method of claim **1**, wherein performance of the operation is prohibited by the security application outside of the security bypass environment.

12. The method of claim **1**, wherein performance of the operation is terminated in response to termination of security bypass environment.

13. A system for performing an operation in a computing environment, the system comprising:

a computing environment including a plurality of computing devices configured to be communicatively coupled to each other via a communications network, the computing environment being governed by a security application; and

a processing device associated with one of the computing devices, the processing device being programmed to execute instructions from memory to:

execute a security bypass environment in the computing environment governed by the security application, the processing device being programmed to configure the security bypass environment to provide a bypass to the security application;

receive a request including a passcode which is dynamically specified and expires in response to an event to perform an operation in the computing environment via the security bypass environment, performance of the operation being prohibited by the security application; and

perform the operation through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing by the security application,

wherein satisfaction of the access control criteria includes acceptance of the passcode.

14. The system of claim **13**, wherein the processing device is programmed to execute instructions from memory to execute a security bypass environment by executing a trusted software application subject to permission from a security application, the trusted software application providing the security bypass environment for bypassing the security application.

15. The system of claim **14**, wherein the processing device is programmed to execute instructions from memory to receive the request to perform an operation by receiving a request to execute an untrusted software application via the security bypass environment provided by the trusted software application, execution of the untrusted software application being prohibited by the security application.

16. The system of claim **15**, wherein the processing device is programmed to execute instructions from memory to perform the operation by executing the untrusted software application via the security bypass environment in response to satisfaction of the access control criteria.

17. A non-transitory computer-readable storage device configured to store instruction executable by a processing device, wherein execution of the instructions causes the processing device to implement a method of performing an operation in a computing environment comprising:

executing a security bypass environment in the computing environment governed by the security application, the security bypass environment being programmed to provide a bypass to the security application;

receiving a request including a passcode which is dynamically specified and expires in response to an event to perform an operation in the computing environment via the security bypass environment, performance of the operation being prohibited by the security application; and

performing the operation through the security bypass environment in response to satisfaction of access control criteria specified for the security bypass environment, performance of the operation bypassing by the security application,

wherein satisfaction of the access control criteria includes acceptance.

18. The medium of claim **17**, wherein executing a security bypass environment comprises executing a trusted software application subject to permission from a security application, the trusted software application providing the security bypass environment for bypassing the security application.

19. The medium of claim **18**, wherein receiving the request to perform an operation comprises receiving a request to execute an untrusted software application via the security bypass environment provided by the trusted software application, execution of the untrusted software application being prohibited by the security application.

20. The medium of claim **19**, wherein performing the operation comprises executing the untrusted software application via the security bypass environment in response to satisfaction of the access control criteria.

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